REPORT

GOVERNMENT
1884
N.W.P. & OUDH

ON THE

HORTICULTURAL GARDENS, LUCKNOW,

FOR THE YEAR ENDING 31ST MARCH, 1884.

ALLAHABAD:
NORTH-WESTERN PROVINCES AND OUDH GOVERNMENT PRESS.
1884.

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From

The DIRECTOR, DEPARTMENT of AGRICULTURE AND COMMERCE,

North-Western Provinces and Oudh,

To

The SECRETARY to GOVERNMENT,

North-Western Provinces and Oudh,

Naini Tal.

Dated Cawnpore, the 30th June, 1884.

Sir,

I have the honor to submit herewith the annual report of the Superintendent, Horticultural Gardens, Lucknow, for the year ending 31st March, 1884.

2. Owing to fitful and scanty rains the year was one most unfavorable to gardening operations and uncertainty as to the weather exercised a marked diminution in the indents. Notwithstanding this, the financial results were still more successful than in the previous year. Income exceeded the sanctioned estimate of Rs. 10,000 by Rs. 822-13-5, and the expenditure fell to Rs. 13,893-12-2 against a sanctioned estimate of Rs. 14,000, while the loss on fruit trees sold under the rules at reduced prices or distributed gratis amounted to Rs. 725-12-0. The net cost to Government, therefore, was only Rs. 2,345-2-7.

3. *Fruit culture.*—The crops of leechies, mangoes, and pine-apples were fairly good, but the rest were poor. A great deal was done towards improving impoverished plantations by trenching and manuring. Interesting and instructive observations and experiments were conducted on the culture of pear and papaya trees, carobs, strawberries, and bear fruit.

4. The Government of Cyprus, when despatching the last consignment of carob seed, drew attention to the necessity for grafting—an operation the feasibility of which with the carob was doubted by competent botanists. Mr. Ridley has however been successful with some grafts, and thus opens out a hope that this tree may yet be cultivated with profit.

5. Amongst the new varieties introduced the Queensland guava has been found inferior to the indigenous variety. A new variety of mango, (the Sada-phul) said to produce four crops a year, has been obtained.

6. *Vegetable and farm culture.*—Egyptian rice-corn is finally condemned as unsuitable to this part of India, and this year both American field maize and table-corn failed. Japan pea, *Tagasasti* grass, and American pumpkins also failed. The musk melon (received through the Government of India) gives promises of ultimate success, and the Ice-rind melon, which did well last year, has again been a success in the gardens, but not with native growers, which points to some fault in the treatment used by the latter. Of 50 plants of the *Atriplex nummularia* only two plants survived, which are now doing well. A number of plants of *Withania coagulans* are doing well.

7. Cultivation of the Belgium white carrot is being persevered with in order to determine the difference in yield between imported and acclimatised seed.

8. Twelve varieties of exotic cotton were cultivated on small plots in order to test the practicability of improving the staple of Nankin cotton by crossing it with white American varieties. A cross was obtained between New Orleans and Nankin, which retained the colour of the Nankin with the staple of the New Orleans and the seed will be planted next year.

9. In view of the general interest existing in the question of Government grass reserves for the army Mr. Ridley was directed last year to keep two plots of *dhúb* grass of equal size and subject to the same conditions of soil, &c., under observation for one year—the grass on one plot to be cut with the sickle as recommended by many, and, on the other plot, to be pared or "chiled," as practised

by the native. The result is a yield of 129½ maunds of grass per acre in favor of native experience. This striking result points to the necessity of undertaking more extended experiments in the same direction.

10. *Flower culture.*—The demand for acclimatised seeds was about the same as last year. Fourteen new varieties have been added to this section.

11. Cola-nut seeds were tried, but failed to germinate. The paper mulberry (*Broussonetia papyrifera*), a recent introduction, promises well, and 160 cinnamon plants have been raised from a large parcel of seeds received from Ceylon.

12. A large number of plants and trees new to the gardens have been added to them.

13. *Arboriculture Nursery.*—The number of trees distributed was 8,313. An acre has been planted up with mulberry trees (*Morus multicaulis*) as the nucleus of an experiment in silk culture and 1,600 mango trees were raised for free distribution. A small spare plot was planted with China grass to meet the increasing demand of that fibre for experimental purposes.

14. *Exotic Nursery.*—An acre was added and planted up with Divi-divi trees at 15 feet apart, the object being to test on a fair scale the profits arising from the cultivation of Divi-divi as set forth in some papers circulated from the Government of India last year. During the kharíf season a crop of urd was raised in the vacant space between the young trees, which, after paying rent and all expenses of cultivation, gave a net profit of Rs. 12-3-3. Advantage has been taken of the necessity for watering the young trees in the hot weather to plant pumpkins in the watered spaces round the young trees and so further reduced the cost of cultivation.

The rest of the exotic plantation has been equally well managed and calls for no further remark.

15. *Apprentices.*—Two were promoted to the regular establishment of the Wingfield Park and the remainder are reported as doing well. The necessity for this class is evinced by the fact that 17 applications for trained Malis were received during the year.

16. *Horticultural Show.*—The classes for vegetables were somewhat inferior, but, in all other respects, the show was equal to its predecessors, and public favor towards the institution increases. As before, the contribution of Rs. 50 from the Municipality covers all cost over and above receipts.

17. Mr. Ridley deserves much credit for his economical and successful management of a public institution, which, in addition to its great utility as a centre of distribution and experiment and a practical school of gardening, is at all seasons remarkable for its extreme beauty.

I have the honor to be,
SIR,
Your most obedient servant,

W. C. BENETT,
Director.

REPORT

ON THE

HORTICULTURAL GARDENS, LUCKNOW,

FOR THE

YEAR ENDING 31st MARCH, 1884.

I.—FRUIT CULTURE.

Oranges.

1. THE orange crop this year was a light one on all kinds except the Kewla, which yielded well. Scarcely any fruit was obtained from the Mandarin, Cintra, and the two Nagpur varieties.

2. One plot of Maltas measuring 1,582 square yards, the trees on which were mostly in a dead and dying state and which had ceased to yield, was cleared and the ground trenched 2½ feet deep and improved by a liberal addition of clay, sweepings, and half-decomposed leaves. In the rains this plot will be planted up with plants of the Sylhet variety.

3. A portion of the Mandarin plot was also treated in the same way, and next year I hope to be able to treat the remaining portion in the same manner, as well as another small plot of Maltas which are quite worn out and fruitless.

4. The plot trenched last year has been planted up with plants of the Sylhet orange, placed 12 feet apart each way, and these, so far, are doing well.

5. At present both the grape and mango crops promise considerably better results than last year.

(a) IMPROVEMENT OF INDIGENOUS OR ACCLIMATISED KINDS.

6. The experiment with oranges on the pummelow stock has every evidence of failure. Several of the plants have died and not a single specimen of the survivors is in a flourishing condition. As a stock for the orange tribe, the pummelow, I fear, must be regarded as inferior to the large indigenous sour lime. None of the trees in the other experimental plots have borne fruit yet, but nearly all are in a healthy and satisfactory condition. More time is required to prove the merits or demerits of the various stocks and methods of culture under observation, but the advantage of trenching and improving the ground as previously described is placed beyond doubt by the flourishing condition of the young trees on plots so treated.

Mandarin orange.

7. Although every attention was bestowed upon the young Mandarin orange trees planted in the vegetable garden, I regret to state all have died.

Inarching several kinds on one stock.

8. The attempt at buddings several kinds on the same stock, and subsequently inarching them together, produced nine plants, which have been planted out on trenched ground.

Hybridising.

9. A lot of seedlings from hybridised fruits have been raised, but it will be years before it can be known whether they are really hybrids or not. A few buds were secured from the oldest seedlings, but only two have taken. A larger number will however be available next year.

Vines; grafting.

10. Some sixteen grafts were successfully made this year, most of which have been planted out for trial and observation.

Ridges.

11. As the pine-apples which were planted experimentally on the vine ridges were found to grow satisfactorily, the remaining ridges were planted up with young pines in August. Between the two a profitable return ought to be realized when the plants come into full bearing.

12. All the vines imported in 1882 are in blossom this season.

Mangoes.

13. Three plants of Bhadania grafted on seedlings of the same were planted out in prepared sites, and a dozen more plants of the same have been successfully inarched.

Pears.

14. Some very interesting facts were elicited regarding the merits of the common country pear (naspathi) by simply allowing the fruit to remain on the trees till it was thoroughly ripe. An article vastly superior to what is usually sold under that name was the result; in such important points as size, flavor, and softness, superiority was strikingly apparent, and left no room for doubt as to its being a very good fruit when allowed to come to maturity on the trees.

15. There are two varieties—the one a pale green, the other a dark brown. The green variety is, I consider, the best, and was found to ripen a week or ten days earlier than the other.

Careful and repeated trials were made to ascertain when the fruit was in the best condition for gathering, from which it was found that the green kind was ripe the first week in October, and the other about the middle of the month. It was also found that the fruit did not improve by keeping, but was best used fresh from the trees.

16. It is certainly a fruit well worth cultivating, and deserves to be more extensively planted than has hitherto been the case; it is of easy culture and bears well.

17. The plants grafted last year have made excellent growth, but have not fruited yet.

Peaches.

18. The peach orchard having got into a very unsatisfactory condition, thorough renovation was considered desirable, and accordingly about one half of the area was trenched over and liberally manured to a depth of 2½ feet and afterwards planted up with good strong plants of the best kinds. Next year I hope to complete the remaining portion.

19. A lot of seeds from selected fruits have been sown in the hope of raising superior varieties.

Baers.

20. The baer trees under experimental cultivation all fruited abundantly; thinning the fruit, manuring and watering the trees, had the effect of increasing the size of the fruit over that of the same kinds left to themselves, but the fruit seemed to suffer in flavor with the more liberal treatment.

Seeds from selected fruits have been put down with the same object in view as just mentioned for peaches.

Carobs.

21. Although coming more correctly under arboriculture, it may be stated here that the efforts made to graft (inarch) the carob have this year been successful: eleven grafts were ready in August, and in March twelve more were taken off; a number are attached, and as stocks are ready more will be put on.

The stocks used are seedlings from the old trees; the first batch were put on in April, but a month earlier would probably prove a better season.

22. Nine of the first grafts have been planted out in different soils and sites for trial.

Papaya (*Carica papaya*).

23. In one of the parts of Mr. Thomas Christy's *New Commercial Plants* it is stated that papaya plants raised by sowing the fruit whole produce superior fruit to those raised in the ordinary way. Having a supply of fruit, a few were put down with the object of putting this statement to the test. The commencement was far from favorable, as the decayed fruit proved fatal to most of the seedlings, which came up numerous enough. Three, however, survived and were duly planted out, and with care and time promise to give evidence for or against the above-named method of raising seedlings of this fruit tree.

Arabian date palms.

24. The condition of the trees, and results obtained, were much the same as those of last year. Eighty-three trees are in flower; 40 female and 43 male.

The effort made at propagation by offsets has not proved very successful, due no doubt to the offsets not being old enough. A large stock of seedlings is on hand.

Strawberries.

25. The experiments with strawberries begun last year have been repeated this on the same sites. As the plants are still bearing, the respective yields cannot be given, but so far as their appearance, the size and quantity of the fruit go, the advantage appears to be on the side of the unmanured plot.

This is a point deserving further trial, and I should be glad if others would take the matter up and communicate the results. At present it may safely be assumed that over-manuring for this fruit is an easy possibility.

Native growers, who are above all things practical, have discovered the advantage of new soil or a yearly change of site.

Cultivation of fruit trees, profit and loss.

26. The following table shows the expenditure and receipts per acre on the orchard fruit trees grown in the garden :—

Name.	Cost per acre.	Value realized per acre.	Profit per acre.	Loss per acre.	Remarks.
	Rs. a. p.	Rs. a. p.	Rs. a. p	Rs. a. p.	
Peaches	114 8 0	111 10 0	...	2 14 0	Loss due to cost of trenching half the area.
Vines	62 14 0	59 13 6	...	3 0 6	Poor crop.
Alubukharas	43 13 6	71 1 6	27 4 0	...	Good crop.
Mangoes and pine-apples ...	32 6 0	150 0 0	117 10 0	...	A fairly good yield of both.
Leechies	34 12 9	176 0 0	141 3 3	...	A fairly good crop and sold well.
Malta oranges	32 3 9	27 8 9	...	4 11 0	A very poor crop.
Cintra „	57 7 0	30 9 0	...	26 14 0	Exceedingly poor crop.
Malta lemon	27 8 9	22 15 3	...	4 9 6	Poor crop.
Pummelow	39 14 6	44 13 6	4 15 0	...	Very light crop.

(b) Introduction of New Kinds.

Peaches.

27. Two of the peach trees received three years ago from the Agri-Horticultural Society of India under the names of "Nickel's Large" and "River's Early York" fruited this year. On comparing them with the old kinds in the garden it was found they were inferior to our Agra and Hardoi varieties, both in size and flavor.

Nectarines.

28. Two plants each of the following kinds of nectarines were received and planted :—

"Murray."
"Claremont."

Apricots.

29. Also one of each of the following apricots :—

Brussels, Cashmere, Moorpark, Grass peach.

Almonds.

30. Also four almonds.

Plums.

31. Four black plums—

Four Cabul greengage plum.
Two alubukharas, large.
Two ditto ditto, Chajuri var.

Mangoes.

32. The following new kinds of mangoes were received :—

Two Fuzree.
Three Gopal Bhog.
Three Modam.
Three Fuzli Bensha.
Four Sada-phul.

The plants of the last-named mango, which is said to bear four crops in the year, were kindly given by Raja Randhir Singh.

Kew pine.

33. Six crowns of the Kew Pine apple.

Vines.

34. Sixteen vines of sorts, the names of which have not yet been received.

Plantains.

35. Eleven plantains were received, but as they are without names, it is not known how many of them are new to the garden collection.

Guavas.

36. Four plants of a guava known as Mirzapur were received and have been planted out.

37. Some of the young guava trees raised from seed imported from Australia in 1878, under the name of Queensland White Guava, fruited for the first time this year. The fruit was small hard, and altogether of a very inferior order and not to be compared to any of the local kinds I am acquainted with. It is certainly not worth growing, and if they have no better kinds in Queensland, they might with great advantage introduce some of the best Indian varieties.

Apples.

38. Hearing that a fairly good apple succeeds at Bangalore, half a dozen plants were indented for and arrived in very good order; they are however very small and will require a good deal of care to get them established.

Anona cherimolia.

39. A row of nine plants of *Anona cherimolia* have been planted out on one of the plots trenched for oranges.

Garcinia purpurea.

40. Two plants were received of *Garcinia purpurea*, which in the Concan yields an edible fruit and the seeds the Kokum oil.

(c) Distribution.

41. This year a decrease in the number of fruit trees sent out has to be recorded. This occurs chiefly under oranges and limes, of which unfortunately limited stock, particularly of the former, was in a great measure the cause. The limited number of plants available was brought about through an attempt to raise them in the arboricultural nursery, where, I regret to say, the soil and situation both proved most unfavorable to rearing this class of fruit trees. This will be guarded against in future by finding, so far as possible, space for planting out the stocks in the Horticultural Garden.

42. There was a slight falling off in the demand for loquats and leechees, which, however, was counterbalanced by larger demands for peaches and alubukharas.

43. The following statement shows the kinds of fruit trees and number of each sent out during the year :—

Name.	Sold.	Sold at half price to public gardens.	Sold at half price to Arboriculture Department.	Distributed gratis.	Total.
Oranges...	455	217	...	7	679
Mangoes	595	83	923	16	1,617
Malta lemons	45	56	...	2	103
Kagzie limes	151	83	...	...	234
Sour limes	11	...	...	...	11
Loquats	136	8	...	...	144
Vines ...	109	...	...	5	114
Leechies	55	13	...	...	68
Peaches	98	...	...	2	100
Pine-apples	95	...	...	24	119
Plantains	60	6	...	8	74
Pummelows	4	...	...	...	4
Alubukharas	75	...	...	...	75
Jack fruit	8	...	...	...	8
Ardunia grandiflora	6	8	...	...	14
Papitas ...	25	...	...	...	25
Pomegranates	4	3	...	...	7
Rose-apples	3	...	...	...	3
Jamans	24	...	...	...	24
Date palms	...	...	...	24	24
Pears ...	10	...	...	...	10
Wampee	4	...	...	...	4
Baers ...	4	...	...	1	5
Guavas ...	...	3	...	...	3
Total ...	1,977	480	923	89	3,469

44. The total receipts for the year from sale of the above amounts to Rs. 1,013-2-0, or Rs. 178-6-0 less than last year.

45. The cash loss to the garden on the fruit trees sent out at half price amounts to Rs. 304-10-0, and Rs. 23-2-0 on those sent out gratis; adding these two items to the actual receipts gives a total of Rs. 1,340-14-0 as the value of the fruit trees sent out during the year.

II.—VEGETABLE AND FARM CULTURE.

46. A sowing of the Egyptian rice-corn was made at the beginning of the hot weather and another in the rains, the result in each case confirming the opinion expressed last year, that as a crop it could not be profitably cultivated in this part of India.

Egyptian rice-corn (*Sorghum cernuum*).

47. Three kinds of American field maize, *viz.*, Stowell's Evergreen, Golden Dent, and Maryland White, were sown the last week in September for the purpose of testing them as cold-weather crops. Of Stowell's Evergreen only a few seeds came up, and the other two germinated very indifferently. The plants were strong and healthy enough, but failed to yield satisfactorily, particularly in the case of Golden Dent.

American maize.

48. Trial sowings of several kinds of table corn were made, but owing to the unfavorable character of the season, very indifferent results were obtained.

American table corns.

49. For the purpose of hybridising, and, with the object of effecting a cross between some of the long-stapled white cottons and the Nankin, seeds of 12 varieties were obtained from Saháranpur and a small plot of each was grown in the highly-cultivated soil of the vegetable garden. All grew well and flowered abundantly, thereby affording plenty of material for hybridising, and which was duly availed of; however, out of a considerable number fertilised only three bolls appear to have been successfully crossed, *viz.*—

Cotton.

Louisiana + Nankin (one).
New Orleans + Nankin (two).

The first names represent the seed-parents. In the New Orleans the Nankin color is well developed, but the other is light. It will be interesting to note the character of the plants and produce from these apparently hybridised seeds.

50. A small packet of seed of the Nankin variety procured from Arabia was put under trial. To avoid as far as practicable the possibility of its getting crossed with other kinds it was sown in a prepared plot in the arboricultural nursery. Ridge culture was adopted, and the opportunity taken of testing the effects on the top of the ridges against sowing on the sides, an equal area of each being put down. The advantage of laying the ridges east and west against laying them north and south was also put under trial. The condition of the plants is very much the same on all the plots, and as they have failed to yield a weight test is impossible. Only a few flowers opened, but from some cause or other dropped off without forming bolls. A few of the plants were killed by frost, but the greater portion have lived and with the warm weather have commenced to grow a little; possibly they may yield this season.

51. During the year a trial was made to ascertain the merits as to yield of cutting *dhúb* grass with the sickle against paring it off in the orthodox grass-cut fashion, the results being in favor of the latter to the extent of 129½ maunds per acre. The area was very small, but all conditions were equal as to soil, site, and area. The duration of the experiment was a few days over a year.

Dhúb grass.

52. The usual vegetable garden was maintained for the purpose of instructing the apprentice boys in that branch of gardening,

(*a*) Improvement of Indigenous or Acclimatised Kinds.

53. Cultivation of country vegetables was continued on a small scale and due selection made of the best fruits for seed.

Country vegetables.

54. In the hot weather nine kinds were grown; the season being a favorable one for these crops, better results than usual were obtained and in three kinds improvement was observed.

55. In the rainy season thirteen kinds were under cultivation, the additional one this year being *phut*. Some five varieties of *sem* were also added, the best of which proved to be a long, white, rather narrow-podded variety, locally known as "hilwa." All, however, are well worthy of cultivation for the abundant succulent pods which they yield during the cold season and into the hot weather.

56. Most of the vegetables grown during the rains were almost failures, due to the unfavorable character of the season ; instead of improvement a supply of seed was barely obtained.

Jerusalem artichokes.

57. The experiment tried last year of cutting off a portion of the stalks of Jerusalem artichokes when about to flower was repeated on a somewhat larger scale this : when lifted, the uncut portion had the advantage at the rate of 37½ maunds per acre; this confirms last year's results in favor of non-cutting.

White Belgian cattle-carrot.

58. The cultivation of the white Belgian cattle-carrot is being persevered with; but the respective yields of acclimatised and imported seed cannot be given, as the crop of the latter is not quite ready for lifting yet.

(*b*) Introduction of New Kinds.

Japan pea (*Soja hispida*).

59. The cultivation of the Japan pea was attempted, but, I regret to say, without any better success than last year, although sowings were made at different times in hope of discovering a favorable season. The dates of sowing and results are as follows :—

August	21st	...	None germinated.
September	9th	...	Two or three came up, but soon died away.
"	27th	...	None germinated.
October	4th	...	Ditto.
"	24th	...	Ditto.

I attribute the failure chiefly to bad seed, because, as a rule, crops do not fail climatically till they are above ground ; but as the plants which came up died directly, there is little hope of success with even good seed.

Tagasasti (*Cytisus proliferus*).

60. Seed (½oz.) of Tagasasti was procured from the Botanical Gardens, Ootacamund, and sown early in November. Only a few plants appeared however, and these soon died away. The remarks made regarding the Japan pea apply equally to this case in all points.

Prickly comfrey.

61. Thirty roots of prickly comfrey, also supplied from the Ootacamund garden, were planted out on the 22nd November in a sheltered site in the vegetable garden. They are all thriving, but have not made much growth during the cold season; had they been planted a month or six weeks earlier, I have no doubt they would have done better.

Musk mallow.

62. The seed of musk mallow sent by the Director was sown early in August ; only twelve plants came up, and several of these were small and made little growth before the cold season, when two of them succumbed to cold. Three or four of the best plants flowered about the middle of November and a few pods set, which ultimately yielded mature seeds. Growth ceased entirely during the cold months, but the plants survived and with the return of heat commenced to grow and flower and are now yielding a fair number of small ripe pods, and it is hoped sufficient good seed will be obtained for a larger sowing next year.

63. I find a large proporti on of the seeds have been destroyed in the pods by an insect which has bored its way inside.

American pumpkins.

64. Two kinds of American pumpkins were tried, but only one produced fruit ; a small quantity of seed was thus obtained, but on trial failed to germinate.

65. In the garden the ice-rind water-melon gave a fairly good yield of fruit, which, I found, had not deteriorated in flavor. It appears to have failed as a crop with the native growers, to whom seed was given for trial.

Chow-de-burghley.

66. Among new English vegetables tried was a species of cabbage called Chow-de-burghley. As a crop it was successful enough, but I cannot say that it is superior to other varieties of cabbage. In England it is esteemed for its delicate flavor and power of withstanding the cold in winter, without attaining the toughness and coarseness common to its congeners.

Onions.

67. A new onion called Queen and the Brown Spanish were tried, but have not proved a success.

68. Out of fifty small plants of the salt bush received from Saháranpur in August only two survived. They were planted out in the vegetable garden in December and have made good growth. Eighteen other plants are in stock raised from seed.

Salt bush (*Atriplex nummularia.*)

69. From a packet of seed of *Withania coagulans*, received from the Superintendent, Horticultural Garden, Lahore, in October, a number of seedlings have been raised : at present they are small, but appear healthy.

Withania coagulans.

(*c*) DISTRIBUTION.

70. The demand for acclimatised vegetable seeds was less this year. The chief purchasers of cauliflower seed were public gardens. The kinds and quantity of each sold were:—

Cauliflower early	11 lb.
„ late	6 lb.
Onion, silverskin	5¾ lb.
Lettuce, two kinds	2¼ lb.
Tomatoes	2 oz. (crop failed).
Spinach	5 oz.
Dwarf peas	4½ lb.

71. The amount realised by the sale of the above and 92 packets of country vegetable seeds was Rs. 305-8-6, or Rs. 155-4-6 less than last year.

72. The following were distributed gratis :—

To Superintendent, Botanical Garden, Saharánpur :—

2 lb. red Putwa seed.
4 packets American table corn.
1 do. Papita seed.
1 do. Karola seed.

To Colonel Underwood, 2nd P. C., Dehra Gházi Khán:—

1 packet Sooly Qua.
1 do. Ice Rind Water-melon.

To Superintendent, Horticultural Garden, Lahore :—

1 packet red Putwa.
1 do. Cape gooseberry.
11 do. country vegetable seeds.
2 oz. Cauliflower.
2 oz. Onion.
1 oz. Lettuce.

To Superintendent, Botanical Garden, Ganesh Khind, Poona :—

1 lb. Cauliflower.

To J. G. Morris, Esq., Cantonment Magistrate, Saugor.

2 seers wheat barley.

To Mr. A. McClay, Oudh and Rohilkhand Railway, Lucknow :—

12 packets country vegetable seeds for transmission to the Andaman Islands.

III.—FLOWER CULTURE.

73. I regret to state that it has not been possible to complete the border prepared last year for roses owing chiefly to a sufficient supply of plants of the right kinds not being available. As they are intended for display and to augment the supply for cuttings, it is of course most desirable that only the best kinds should be planted ; large numbers of the kinds likely to best answer this twofold purpose are being raised, and I fully expect sufficient will be available to admit of planting up the border during the coming rains.

Improvements in grounds.

74. The remaining portion of the rose garden was taken in hand and the ground raised and levelled and prepared for replanting.

75. I am afraid the site chosen for the selected bulbs of the Hybrid Amaryllis is unsuitable, as they have neither the growth nor the vigour they ought to have ; further trial will decide the question of providing a new site.

Hybrid Hippeastrums.

Among the unselected seedlings there is a good show of flowers—several fresh ones and a few worthy of selection. Hybridising is being attended to with the object of further improvement, and to aid in this a few choice kinds have been procured from England.

No communication has yet been received from Messrs. Veitch regarding those supplied to them but enquiry will bo made on the subject.

Orchids.

76. A collection of orchids is being formed and of some kinds a good number of plants have been secured, but variety both in genera and species is rather limited. Most of the kinds are doing well, but considerable disadvantage is experienced in growing them as at present among a collection of miscellaneous plants, as it is not found possible at all times to give the peculiar treatment many of them require ; to provide this a separate house is necessary, and when the collection has increased a little more there will be a double necessity for providing such a structure.

77. The cultivation of the acclimatised flower seeds has had careful attention; the demand for them was about the same as last year, and the amount realised is within a few annas of last year's receipts for the same, *viz.*, Rs. 911-5-0.

(*a*) Introduction of New Kinds.

78. The following flowering annuals were grown for the first time :—

Silene pendula ruberrima nama.
Nicotiana offinis.
Sweet William (Haut and Braggs).
Candytuft White Tom Thumb.
Lupinus luteus.
Sweet pea, white.
Centaurea cyanus.
Tunica saxifraga.
Papover Daneborg.
Sphenogyne aurea
Helipterum Sandfordii.
Waitzia grandiflora.
Gillardia Lorenziana.
Six new varieties of Convolvuli.

79. Though a species of tobacco, *Nicotiana offinis* is grown for its display of large, white, highly-scented flowers, which it produces in profusion. It has been a great success this year.

Cinnamomum Zeylanicum

80. A large supply of seeds of *Cinnamomum Zeylanicum* was received from the Botanical Garden, Paradenya, Ceylon, in October. A high percentage, I regret to say, have failed to germinate, and, owing to the succeeding cold weather, the seedlings which did come up made little growth ; there are however 160 alive at the present time.

Cola-nut.

81. I also regret to say that the Cola-nut (*Cola acuminata*) seeds received from Mr. Christy failed to germinate.

Paraguay Tea.

82. The indent made to the same firm for a supply of seeds of *Ilex Paraguayensis* has not yet been complied with.

Paper Mulberry.

83. Of the plants of *Broussonetia papyrifera* raised last year twenty-five were planted out in July last. They were not injured by the cold in winter and are now in a healthy condition.

African *Landolphia*.

84. A dozen plants of one of the African rubber-yielding *Landolphias* have been received from the Botanical Garden, Calcutta.

Oil Palm.

85. Although kept in a sheltered place, most of the plants of the Oil Palm (*Elæis Guineensis*) were killed by the cold : only four have survived.

86. During the year the following trees and plants were added to the garden collection :—

Trees—

Amoora Rohituka.
Dammara orientalis.
Corynocarpus Roxburghii.
Xanthochymus pictorius.
Pterocarpus alberglodes.
Chrysophyllum cainito.
Dillenia pentagnea.
Hermandia peltata.
Gnocardia odorata.
Talauma Hodgsoni.
Cordia Sebestena.

Shrubs—

Ixora Japonica floribunda.
" affinis.
" Dixiana.
" illustris.
" splendida.
Hibiscus cruentus.
" grandiflorus.
" lilliflorus aurea.
Capparis brevispina.
Turneria ternatea.
Acalypha musiaca.
" macafeeanus.
Anthrostemma lineatum.
Limonia spectabilis.
Gardenia florida.
" Fortunei.
Aphelandra cristata.

Climbers and creepers—

Passiflora mutabilis.
Allamanda cathartica.
" chelsonii.
Memecylon tinctorium.
Pothos argentea macrophylla.
" sp.
Asparagus plumosus.
Batalus paniculata.

Crotons—

Neptune.
Sir Richard Garth.
Eckhanti.
Baal.
Cornigerus.
Papuair.
Royal Prince.
Splendens.
Hawkerii.
Murillo.
Kingianus.
Reginæ.
Ornatus.

Palms—

Chamœdora Ehrenbergiana.
Dæmonorops marginata.
" melanocarpus.
" Livisianum.
Cycas media.
Licuala horrida.
Cocos schizophylla.
" Gartnerii.
" campestris.
" datel.
" flexuosa.
Livistona subglobosa.
Sabal mauritiformis.

Palms—(concluded)

Calamus callicorpus.
Corypha tomentosa.
Chamœrops histrix.
" humilis flexuosa.
" robusta,
" humilis arborea.
" lanceolata.
" nigra.
" nivea.
" humilis macrocarpa.
Jubœa spectabilis.
Kentia belmoreana.
Licuala spinosa.
Maxamilliana panamensis.
Phœnix tenuis.
" paludosa.
" leonensis.
" tomentosa.
" macrocarpa.
Sabal umbraculifera.
Thrinax radiata.

Herbaceous plants—

Heliconia aurea striata.
Goldfussia glomerata.
Aspidistra variegata.
Begonia marmoratœfolia.
" tomentosa.
" sp., Assam.
" sp.
" adeyense.
Salvia atropurpurea.
Pogostemon patchouli.
Rienchia carnea variegata.
Eryngiun sp.
Dieffenbachia splendens.
" costata.
" carderi.
" insignis.
Dracœna gracilis.
" Mooreana.
" Macleayii.
" rigidifolia.
" Younghij.
Coleus Duchess of Edinburgh.

Bulbs and tubers—

Hemeroocallis Kawansa fl. pl. foliage variegatus.
" Thunbergii.
" disticha flora pleno.
Hedychium Gardenerianum.
Ismene undulata.
Crinum sp.
" Mauritianum.
Alocasia metallica.
Maranta binottio.
Anthurium crystallinum.
Pyrethrum rubrum plenum.
Ornothogalum aurea.
Calla hastata.
Amaryllis Napoleon I.
" Ackermanni.
" ne plus ultra.
" magnifica.
" Pardinus George IV.
" " Beauty.
" " perfecta.
" Cleopatra.
" Lepoldi.

Ferns—

Asplenium viviparum.
Adiantum nigrum.
" scutum.
" curvatum.
" speciosum.
" intermedium.
Athyrium goringianum pictum.
Agleomorpha meyeniana.
Blechnum occidentale.
" corcovadense.
Drynaria coronaus.
Diplazium Thwaitsii.
Goniopteris crenata.
Lastrea Richardsii multifida.
" membraneifolia.
Nephrolepis ensifolia.
Pteris pungeus.
Phlebodium aureum.
Ancimia Phillitides.
Asplenium sp. (Penang).
Pteris crenatus.
Selaginella erythropus.
" serpens.

Orchids—

Aerides maculata.
Bletia Shepherdii.
Bolbophyllum furcesens.

Orchids—(concluded)—

Cœlogyne cristata.
" nitida.
" hirsuta.
" sp.
" ovalis.
Cymbidium cylindrica.
Cyprepedium venustum.
" insigne.
Dendrobium amœnum.
" formosum.
Epidendrum crossifolium.
Phalœnopsis amabilis.
Phaius albus.
Renanthera coccinea.
Saccolabium speciosum.
" ampullaceum.
" Blumeii.
" papilosum.
" gigantea.
Vanda teres.
" Roxburghii var. tessellata.
" gigantea.

Succulents and Cacti—

Agave elsiana.
" Jacquiniana.
Podilanthus variegata.
Stapelia fœtida.
Nerium obesum.
37 new roses, plants.

(*b*) DISTRIBUTION.

87. In appendix IV. details of the distribution of plants and seeds for the year are given. Under plants, &c., there is a falling off compared with last year, which is chiefly due to no strawberry plants having been sent out, there being none to dispose of this year.

88. A considerable increase is shown in the distribution of seeds.

89. The approximate value of the plants and cuttings distributed gratis was Rs. 398, which added to the cash loss on fruit trees gives a total cash loss to the garden receipts of Rs. 725-12-0.

IV.—ARBORICULTURE.

90. As most of the trees required for district and station arboriculture are raised in a separate nursery, very little work coming under this head is done in the Horticultural Garden.

91. The chief trees under observation there are carob, *Prosopis glandulosa*, and *Eucalyptii*, all of which are in much the same condition as mentioned last year.

92. A good supply of mature seed was secured from the trees of *Eucalyptus citriodora*, and from which a large stock of seedlings is being reared. A good deal of care is required to ensure success in this operation, as the seedlings are exceedingly delicate when small and readily damp off if the soil which they are growing in gets too moist. On this account it is almost hopeless to attempt sowing during the rainy season. The best results are obtained by sowing in October or November, when established heat does not appear to hurt the seedlings; but those in the garden are in sheltered positions, and no trial has been made with them here in exposed situations. This, however, will be done in the Exotic plantation as soon as plants are ready to put out. It is not a shade tree and doubtful for timber, but the straight smooth stems would no doubt be useful for a variety of building purposes; and as close planting is feasible, a large number could be grown on a small area.

It would appear the leaves have the power of emitting the pleasant odour they are so highly endowed with, as I have on several occasions, when passing near the trees in the early morning, found the air most deliciously scented with their well-known perfume. This quality alone marks it out as a tree most desirable for planting, particularly in places where odours of a contrary character prevail.

(a) Introduction of New Kinds.

93. The efforts made to get up new stocks of *Eucalyptus corynocalyx*, *diversicolor*, and *ficifolia* have failed, and the single specimen of the latter reported alive last year has died.

94. Several other species of *Eucalyptii* are being raised.

(b) Arboricultural Nursery.

95. With the sanction of Government, arrangements were made during the year to raise a stock of mango trees for free distribution. Owing to the difficulty in procuring seed and losses from various causes among the seedlings only 16,000 plants have been raised.

96. To carry out this scheme it was necessary to increase the area to which the nursery was reduced last year, and this was done by retaining the land released from agricultural experiments. More space was of course afforded by this arrangement than was at once required for nursery work, but the greater portion has been utilised for other purposes. One acre has been planted with Divi-divi, another with mulberry (*Morus multieaulis*), and 2½ acres with Nankin cotton for supplying seed, and about half an acre with Rhea to provide a stock of plants.

97. The following statement shows the number of trees raised and distributed during the year and those now in stock :—

1	2	3	4	5	6	7
Name of plant.	Total in nursery on 31st March, 1883.	Distributed during 1883-84.	Died and cut down during 1883-84.	Balance on hand on 31st March, 1884.	Raised during 1883-84.	Total in nursery on 31st March, 1884.
Amb	350	699	...	...	16,349	16,000
Ambili	5,100	308	1,862	2,930	...	2,930
Mohwa	350	264	...	86	140	226
Gular	325	143	...	182	...	182
Kathal	50	...	...	50	140	190
Bahera	600	2	...	598	...	598
Eucalyptus	25	3	...	22	...	22
Jaman	4,725	1,372	756	2,597	110	2,707
Pakur	1,750	488	...	1,262	...	1,262
Pipal	2,240	278	387	1,575	...	1,575
Gosum	30	...	...	30	...	30
Shahtoot	5,900	4,239	1,661	...	...	...
Carob	100	...	...	100	...	100
Burgud	1,500	254	671	575	...	575
Bel	1,080	30	...	1,050	...	1,050
Khirni	200	2	28	170	...	170
Amra	700	5	...	695	...	695
Kaitha	1,500	2	287	1,211	...	1,211
Divi-divi	...	222	...	...	522	300
Pithecolobium saman	...	2	...	...	2	...
Total ...	26,525	8,313	5,652	13,133	17,263	29,823

(c) Exotic Plantation.

98. As previously stated, the area of the Exotic plantation has been increased by the addition of an acre of Divi-divi, which raises the total area to 7 acres 3 roods 15¾ poles.

99. The object of the Divi-divi plantation is to ascertain what can be made by cultivating it in a regular way for its pods. The trees are placed 15 feet apart each way; this of course leaves a considerable amount of vacant ground while the trees are young, and to utilize this a crop of urd was grown between the trees during the rains, from which a profit of nearly Rs. 17 was realised. After deducting the charges connected with sowing, reaping, and cleaning the grain, and after paying the year's rent, a profit of Rs. 12-3-3 still remains.

100. During the hot weather the experiment of growing pumpkins by sowing them in the *thalas* is being tried; the trees (Divi-divi) have to be watered, and it was thought there would be sufficient moisture to support both, and, if successful, the gourds would shade and keep the ground cool.

101. During the year plants of the two following kinds were planted out for trial :—

Acronychia Baneri	7
Broussonetia papyrifera	12

102. The number and condition of the kinds previously planted are as follows :—

	Number alive last year.	Number alive this year.	Remarks.
Cordia ferruginea (Mexican ebony) ...	4	4	Killed down to within a foot of the ground; sprouting again
Acer negundo	2	4	Two more planted—made little progress.
Maclura aurutiaca (osage orange) ...	4	4	Healthy
Swietenia mahogany (mahogany) ...	18	15	Three dead; rest grown little
Owenia cerasifera (sweet plum)	4	4	Doing well.
Rhus Thunbergii	18	13	Little progress.
Pterocarpus marsupium	4	4	Doing well.
Antidesma Dallachiana	3	3	Moderate progress.
Eucalyptus resinifera	11	11	Doing well.
" rostrata	33	33	Top of one dead; rest doing well.
Pithecolobium saman (rain tree) ...	27	27	Tops of two dead; several others unhealthy, others flourishing
Arabian date palms	23	23	Doing well.
Brachycluton populneum	4	4	Ditto.
Garcinia Roxburghii	6	6	Little progress.
Catulpa bignonioides var. speciosa ...	4	4	Scarcely any growth.

103. A few of the *Pithecolobiums* flowered, but no pods formed; a number are very unhealthy, whilst others are all that can be desired.

(*d*) DISTRIBUTION.

104. The total number of trees sent out was 8,313, details of which are given in the second column of the statement showing the nursery stock for the year.

Trees.

105. In the nursery 370 trees of mulberry (*Morus multicaulis*) were planted out, part in lines as a plantation, and the rest against the fence running round the nursery.

Seeds.

106. The distribution of seeds was as follows:—

To the Superintendent, Botanical Garden, Saharanpur:—

40 lb Inga seed.

To Superintendent, Taj Garden, Agra:—

2 lb Inga seed.

To Colonel Wheeler, Cantonment Magistrate, Cawnpore:—

8 lb Inga seed.

To Mr. Watson, B. D. Canal, Madhopur:—

2 lb Carob seed.

To Collector of Hamírpur:—

2 lb Red Tamarind seed.

To Conservator of Forests, Panjab:—

5 lb 14 oz. of *Prosopis glandulosa* seed.

Sold to various persons during the year :—

58 lb. Inga seed.

107. The estimated expenditure on the Arboricultural nursery for the year was Rs. 600, the whole of which was spent. The total receipts realised and sent in to the District Board amounted to Rs. 60-9-0.

108. The estimated expenditure on the Exotic plantation was Rs. 100, of which Rs. 80-10-0 were spent, leaving a saving of Rs. 19-6-0.

109. The receipts from the same source amounted to Rs. 61-11-6, which sum was paid into the treasury.

110. Details of expenditure and receipts from the two places are given in appendices II and III.

V.—FINANCIAL RESULTS.

Budget.

111. The total estimated receipts for 1883-84 amounted to Rs. 10,000 ; the total actual receipts were Rs. 10,822-13-5, or Rs. 822-13-5 over the estimate.

112. The total estimated expenditure was Rs. 14,000, and the total actual expenditure, Rs. 13,893-12-2, or Rs. 106-3-10 less than the estimate.

Details of increase and decrease over budget-estimate.

113. The amount received as interest on Government notes was Rs. 102-11-11 less than last year; this was of course expected, as the amount received last year represented interest for two years, while the amount received this is for one year. The receipts from subscribers were more by Rs. 25-11-0, and from rent of land Rs. 108.

114. The amount realised by sale of garden produce, as detailed in appendix I., was Rs. 9,699-4-0, or Rs. 587-4-0 over the estimate, and Rs. 608-2-3 in advance of last year's receipts from the same source.

115. The total receipts from all sources exceed those of last year by Rs. 639-1-4, while the expenditure is less by Rs. 103-12-5.

Accounts with seedsmen.

116. At the end of the year there was a balance with Messrs. Landreth and Sons in favor of the garden of 73 dollars 69 cents. The account with Messrs. Sutton and Sons was even.

Subscribers.

117. There was an increase of four in number of first class subscribers during the year. The number of each is as follows :—

First class	13
Second class	16

Apprentice Malis.

118. Out of the 16 boys in the garden at the end of last year, two of the most advanced have been transferred to the Wingfield Park—one as head Mali and the other as a leading man in the flower garden ; the latter is still, however, regarded as a learner, and when sufficiently trained in this branch will be available for a better appointment.

119. The two vacancies were soon filled : one by a boy who has had a good education and knows English very well ; the other had been on the apprentice staff once before, but had left through not finding the work quite to his mind at that time.

120. The other boys continue to make progress, and the older ones appear to have acquired a fairly good knowledge of most branches of gardening ; but I consider it unadvisable to send them out to take charge of gardens yet, as they are still too young to be able to control a staff of men properly.

121. During the year seventeen applications were received for experienced Malis.

Flower show.

122. The Annual Flower Show was held on the 6th of March this year. There was a slight falling off in the quantity and quality of the vegetables exhibited, but in the classes for plants and cut flowers the competition was as large and spirited as on any previous occasion, and taken all round, the results achieved compare favourably with those of previous shows.

It is matter for congratulation to be able to state that the show receives an increasing amount of public favor.

123. The account of the show stands as follows :—

Receipts.

	Rs.	a.	p.
Balance from last year...	239	15	11
Contributed by European and native gentlemen ...	221	0	0
Contributed by municipality of Lucknow	50	0	0
Sale of tickets	68	8	0
Total ...	579	7	11

Expenditure.

	Rs.	a.	p.
Distributed in prizes	288	8	0
Printing schedules and tickets	23	0	0
Construction of tables and repairs to stands ...	30	9	9
Miscellaneous charges...	18	1	3
Balance with Deputy Commissioner	219	4	11
Total ...	579	7	11

Season.

124. The weather experienced during the year was far from favorable to the garden generally. The rains were fitful and scanty, and the weather experienced at that season was most unfavorable to the execution of a good deal of work which can only be advantageously carried out while the rains are on.

The decrease in the distribution of plants may also, I think, be put down to the same cause. Many would-be indentors were no doubt deterred from planting owing to the season being unfavorable for operations of that kind.

Seeds received.

125. The following seeds were received during the year :—

From the Superintendent, Botanical Garden, Calcutta :—

Pithecolobium saman.
Seeds of 16 kinds of palms.
Adansonia digitata.
Musa superba.
Gynocardia odorata.

From the Superintendent, Botanical Garden, Saháranpur :—

Atriplex nummularia,
Scarlet-fruited egg plant.
Broussonetia papyrifera.
Stillingia sebifera.
Schleichera trijuga.
Sterculia colorata.
Cupressus sempervirens.
Cryptomeria japonica.
Pinus longifolia.
Twelve kinds of cotton.
4 lb of pea seeds of kinds.

From the Director, Department of Agriculture and Commerce, North-Western Provinces and Oudh :—

7 lb. of Japan pea seed (Soja hispida).
10 lb. of Divi-divi seed.
Musk mallow (Hibiscus abelmoschus).
3 kinds of American maize.
20 lb. of imported carob seed.

From the Superintendent, Horticultural Gardens, Lahore :—

½ lb. Withania coagulans.

From the Superintendent, Botanical Garden, Ganesh Khind, Poona.

Entada pusoetha.
Cassia occidentalis.

From Dr. Bonavia, Etawah :—

12 packets of seeds collected in the Nilgiri Hills.
Sarda melon seeds of Cabul origin.

From C. F. Cresswell, Esq., Sydney :—

Arancaria Bidwellü.
Angophora lanceolata.
Syncarpia laurifolia.
Twelve kinds of Eucalypti.

From the Acclimatisation Society of Queensland :—

Macadomia ternifolia.
Deplothemum, two varieties.

From Mr. R. Nicholson, Mirzapur :—

Panicum miliare.

From Major Clementi, Kasauli :—

A collection of 15 kinds of Australian seeds.

From Messrs. Thomas Christy and Co., London :—

Cola acuminata (cola-nut).

From Mr. R. Rose, Lucknow :—

Several kinds of nymphœas.
Nelumbium speciosum.
Cashew-nut.
Euryale ferox.
Sarda melon.

From Messrs. Thomson and Bosisto, Victoria, Australia :—

A collection of 50 kinds of Australian seeds.

From the Superintendent, Botanical Garden, Ootacamund :—

Cytisus proliferus (tagasasti).

From the Superintendent, Botanical Garden, Paradenya, Ceylon :—

A case of seeds of Cinnamomum Zeylanicum.

From Messrs. J. P. William Brothers, Henaratgoda, Ceylon :—

Croton Tiglium.
Cœsalpinia Sappan.
Manihot Glaziovi.
Eletteria cardamomum.
Oncospermum fasiculata.

From Messrs. Platz and Son, Erfurt, Prussia :—

5 kinds of palm seeds (by purchase).

From Mr. Ernest Benary, Erfurt, Prussia :—

12 kinds of palm seeds } (by purchase).
Glaziovi insignis }

Plants.

126. The following plants were presented and purchased during the year :—

From the Superintendent, Botanical Garden, Saháranpur :—

2 baskets of orchids of sorts.
5 bags of roots of Rhea (Bœhmeria nivia).
50 Atriplex nummularia.
4 Almonds.
4 Apricots.
4 Nectarines.
4 Plums, black.
4 ditto, Cabul Greengage.
2 Alubukharas, large
2 ditto, do., Chajuri variety.
4 Guavas, Mirzapore.

From the Superintendent, Botanical Garden, Calcutta :—

A collection of 118 plants of kinds.

From the Agriculture and Horticultural Society of India, Calcutta :—

69 useful and ornamental plants.
5 Orchids of kinds.

From the Superintendent, Botanical Garden, Poona :—

7 kinds of orchids.
Garcenia mangostena.
Conocarpus Roxburghii.
Rienchia carnea variegata.
Nerium obesum.
Stapelia fœtida.
Gesnera zebrina.
Crinum sp.
Alocasia metallica.
Dieffenbachia lineata.
3 Begonias of kinds.

From Mr. Girdlestone, Katmandu :—

A collection of orchids of kinds.

From Lady Lyall :—

A collection of orchids of kinds.

From Mr. R. Rose, Lucknow :—

A lot of orchids of kinds.
11 plantains of kinds.
Vine cuttings.

From Mr. G. Reid, Lucknow ;—

A lot of orchids of kinds.

From the Superintendent, Horticultural Garden, Lahore ;—

6 Olive plants (Olea Europœa).
16 Vines of kinds.

From Mr. G. W. Bartlett, Calcutta :—

16 new crotons.
14 other plants and shrubs of sorts.
7 Orchids of kinds.

From Raja Randhír Singh of Bharawan :—

4 plants of sada-phul Mango.

From Mr. C. E. Hicks, Basti ;—

Plants of Nelumbium speciosum.

From Mr. J. Martin, Douglasdale ;—

A lot of bulbs of Lilium Wallichianum.

From Dr. Bonavia, Etáwah ;—

Cuttings of two kinds of Hibiscus from Madras.
" of a good kind of fig.

From Mr. B. Nicholson, Mirzapur ;—

Two plants each of three kinds of choice Mangoes,

From Mr. C. Nickels, Jaunpur :—

A plant of Magnolia grandiflora.

From Mrs. Prendergast :—

A lot of Irish plants.

From Mr. C. Maries, Durbhungah :—

A collection of choice orchids.

From the Superintendent, Botanical Garden, Ootacamund :—

2 dozen roots of prickley comfrey.

From the Victoria Gardens, Bombay :—

14 new and rare plants of kinds.
A lot of Coleus cuttings.

From Messrs. J. P. William Brothers, Henaratgoda, Ceylon ;—

6 suckers of Kew Pine (by purchase).

From Messrs. Barr and Sons, London ;—

9 named Amaryllis bulbs,
12 tuberous Begonias,
12 named sparaxis,
12 Hyacinthus cardicans,
16 Various bulbous plants,
} (by purchase).

From Messrs. J. W. Birkenhead and Co., Sale, near Manchester ;—

A collection of ferns (by purchase).

From the Superintendent, Horticultural Garden, Nagpur :—

6 plants of Pedilanthus variegata,

From Messrs. B. Nagappot and Co., Bangalore :—

6 grafted apple trees, } (by purchase).
2 Banisteria sp., new, }

From Cranston's Nursery and seed Co., Hereford :—

29 new roses (by purchase).

127. Seeds sent out gratis :—

To the Superintendent, Botanical Garden, Sahâranpur :—

1 packet Eucalyptus citriodora.
16 packets flower seeds.

To Mr. G. W. Bartlett, Calcutta :—

A collection of flower seeds.

To the Superintendent, Victoria Gardens, Bombay :—

1 packet Grevillia robusta.
1 „ Calamus Roxburghii.

To Superintendent, Botanical Garden, Ganesh Khind, Poona :—

1 packet Petrospermum acerifolium.
1 „ Calamus Roxburghii.

To Mr. J. Beck, Chumba :—

13 packets of Eucalyptus seed.

To Captain Bellasis, Executive Engineer, Jhánsi :—

8 packets of tree seeds.

To the Botanical Garden, Melbourne, Australia :—

A collection of tree seeds.

To the Deputy Commissioner of Lucknow :—

2 lb. of Shishum.
4 lb. of Babul.

To the Superintendent, Botanical Garden, Calcutta :—

A collection of flower seeds.

To Mr. Watson, B. D. Canal, Madhopur :—

1½ lb. Ailanthus excelsa.

To Colonel Liddell, 10th Hussars, Lucknow :—

11 packets tree and shrub seeds.

To Mr. Nicholson, Mirzapur :—

1 packet of Eucalyptus seed.

M. RIDLEY,
Superintendent, Horticultural Garden, Lucknow.

APPENDIX I.

Statement showing the receipts and expenditure of the Lucknow Horticultural Garden during the year ending 31st March, 1884.

Receipts.	Actuals of 1882-83.	Sanctioned estimate for 1883-84.	Actuals of 1883-84.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Interest on Government notes	210 7 7	108 0 0	107 11 8
Rent of land	426 2 9	300 0 0	451 13 9
Subscriptions	456 0 0	480 0 0	564 0 0
	1,092 10 4	888 0 0	1,123 9 5
SALES			
On cash payment.			
Fruit trees	1,171 6 0	...	1,007 13 0
Vegetable and flower seeds (acclimatised) ...	1,367 2 0	...	1,185 13 6
Ditto ditto (imported)	1,106 3 0	...	1,354 7 0
Ornamental plants and trees	2,486 2 0	...	2,637 7 0
Cut flowers	320 9 3	...	244 15 3
Vegetables	235 4 0	...	202 12 0
Fruit	1,037 11 0	...	1,330 2 3
Wood and grass	33 0 0	...	160 8 0
Miscellaneous	1,244 13 0	...	1,418 0 0
Total cash payment on sales ...	9,002 2 3	9,112 0 0	9,541 14 0
Total receipts in cash ...	10,094 12 7	10,000 0 0	10,665 7 5
Credit accounts.			
Fruit trees	20 2 0	...	5 5 0
Acclimatised seeds	6 12 0	...	31 0 0
Imported do.	30 8 0	...	115 0 0
Ornamental plants	3 8 0	...	...
Miscellaneous	28 1 6	...	6 1 0
Total receipts in credit ...	88 15 6	...	157 6 0
Total receipts in cash and credit ...	10,183 12 1	10,000 0 0	10,822 13 5

Expenditure.	Actuals of 1882-83.	Sanctioned estimate for 1883-84.	Actuals of 1883-84.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Superintendent	3,000 0 0	3,000 0 0	3,000 0 0
Writers and others	358 0 0	444 0 0	360 0 0
Gardeners and Assistants	1,908 10 3	1,948 0 0	1,925 12 3
School for Native Gardeners	651 10 3	790 0 0	723 9 0
Variable labor	1,980 0 3	1,800 0 0	2,172 14 6
Purchase of seeds and plants	2,703 2 7	2,700 0 0	2,421 12 0
Ditto of live stock	639 9 6	500 0 0	398 0 0
Ditto of manure...	28 3 9	100 0 0	15 13 0
Service stamps	124 0 0	118 0 0	117 0 0
Miscellaneous	2,026 5 11	2,100 0 0	2,430 13 0
Maintenance of premises	577 14 1	500 0 0	158 4 5
Travelling allowance	...	...	169 14 0
Total ...	13,997 8 7	14,000 0 0	13,893 12 2

APPENDIX II.

Statement showing the receipts and expenditure of the Arboricultural Nursery, Lucknow, during the year ending 31st March, 1884.

Receipts.	Amount.	Expenditure.	Amount.
	Rs a. p.		Rs. a. p.
Miscellaneous	60 9 0	Purchase of seeds and plants	2 13 3
		Pay of gardeners	171 2 3
		Cost of watering	57 6 9
		Miscellaneous	368 9 9
Total ...	60 9 0	Total ...	600 9 0

APPENDIX III.

Statement showing the receipts and expenditure of the Exotic Plantation, Lucknow, during the year ending 31st March, 1884.

Receipts.	Amount.	Expenditure.	Amount.
	Rs. a. p.		Rs. a. p.
Sale of fruit	20 0 0	Labor	44 14 0
Miscellaneous	41 11 6	Purchase and carriage of seeds and plants	5 0 6
		Contingencies	30 11 6
Total ...	61 11 6	Total ...	80 10 0

APPENDIX IV.

Abstract of distribution list for 1883-84.

Number.	Name of department, &c., supplied.	Plants.									Seeds.							
		Fruit.		Strawberries.	*Ornamental and timber trees.*		*Ornamental plants and shrubs.*		Bulbs and tubers.	Total.	Vegetable.	Flower.	Fruit.	Tree and shrubs.	Miscellaneous.	*Total*		
		Plants.	Cuttings.		Plants.	Cuttings.	Plants.	Cuttings.								Number of packets.	Weight of seeds.	
1	Arboriculture	923	...	...	176	...	...	...	...	1,099	...	...	...	...	...	..	...	
2	General public	1,699	12	...	552	...	4,776	460	3,605	11,104	2,671	4,046	8	207	18	6,950	599	8
3	Government and public gardens in India	400	...	...	184	...	1,540	48	374	2,546	518	1,029	...	20	6	1,573	237	2
4	Ditto private ditto in other countries ...	...	...	...	...	...	...	...	...	...	...	...	...	16	..	16	1	0
5	Jails	447	...	...	50	...	...	...	1,000	1,497	118	...	...	...	5	123	32	9
	Total ...	3,469	12	...	962	...	6,316	508	4,979	16,246	3,307	5,075	8	243	29	8,662	870	3

(Plants distributed from Arboricultural Nursery are not included in this.)

M. RIDLEY,

Superintendent, Horticultural Garden, Lucknow.

ORDERS OF GOVERNMENT.

No. $\frac{830}{\text{I}-434\text{-}2}$ OF 1884.

FROM

THE CHIEF SECRETARY TO GOVERNMENT,
N.-W. PROVINCES AND OUDH,

TO

THE DIRECTOR OF AGRICULTURE AND COMMERCE,
N.-W. PROVINCES AND OUDH.

DATED NAINI TAL, THE 28TH JULY, 1884.

SIR,

REVENUE DEPARTMENT.

I AM directed to acknowledge the receipt of your No. 824A., dated 30th June, 1884, with which you submit the annual report on the Lucknow Horticultural Gardens.

2. The operations of the gardens are classified as—

I—Fruit culture,

II—Vegetable and farm culture,

III—Flower culture,

IV—Arboriculture,

the last department being, it is understood, supported by the District Board. In the fruit garden further observations were made to determine the most suitable stocks for orange grafts, to ascertain the results of hybridising and inarching, and to test the merits of different imported and indigenous species. The country pear has been shown capable of considerable improvement, and grafts have been successfully made of the carob. Experiments have been continued in the culture of strawberries and the propagation of the Arabian date-palm. Many new varieties of peaches, plums, mangoes, pine-apples, plantains, and other fruit-trees have been introduced. The Queensland guava proves to be inferior to the ordinary Indian fruit,—a fact which might be communicated to the Australian societies with advantage to them.

3. The operations in vegetable and farm culture included the trial of several imported cereals, none of which seem suitable to this country. The Japan pea, here also as at Saháranpur, has proved a failure. Nankin cotton has been successfully hybridised with long-stapled white varieties. Experiments in grass culture prove decisively the superiority of the native plan of grubbing dúb grass over the European fashion of cutting it. The cultivation of country vegetables was continued with a view to improving indigenous and acclimatised kinds, and some improvement was noticed in hot-weather vegetables, any addition to the scanty number of which would be very desirable. Several new vegetables were tried with varying success.

4. In the flower garden excellent work has been done in the cultivation of acclimatised flower-seeds, the introduction of new annuals, and

the enlargement of the existing collections of orchids, ornamental shrubs and trees, creepers, ferns, and flowering plants. The distribution list of this section shows the useful end which this garden serves in promoting flower culture throughout the province.

5. In the arboricultural garden, besides the usual propagation and distribution of seedlings, experiments were commenced or continued in the cultivation of various Eucalypti, Divi-Divi, the paper mulberry, and many other useful or ornamental trees.

6. In spite of an unusually bad season, 16,246 plants and 8,662 packets of seeds were distributed to the general public and to different Government institutions. Sixteen apprentice gardeners were kept under training, and are said to have made creditable progress. The annual flower show was held in March, and as usual proved a success.

7. The financial results of the year were very satisfactory. The total expenditure amounted to Rs. 13,894, of which Rs. 10,823 was defrayed from the income of the garden itself, leaving a charge to Government of only Rs. 3,071; and from this a further deduction of Rs. 726 should be made on account of plants and seeds distributed gratis or at reduced prices.

8. The Lieutenant-Governor and Chief Commissioner notices the thoroughly practical nature of Mr. Ridley's experiments, and his efforts to test, adopt, and improve indigenous products and native methods of cultivation. The management of these gardens, which add greatly to the attractions of Lucknow, must be pronounced very creditable to Mr. Ridley.

I have the honor to be,

SIR,

Your most obedient servant,

J. R. REID,

Chief Secretary to Government,
N.-W. Provinces and Oudh.